

Application No. 10/662699
Response to Office Action of September 15, 2006

REMARKS/ARGUMENTS

Claims 31-36 are new. Support for these claims is found throughout the originally filed specification and claims. Claims 1-36 are pending. Favorable reconsideration is respectfully requested in light of the Remarks below.

Applicants thank Examiner Mayes for the helpful comments and explanations present in the outstanding Office Action.

The rejections of Claims 1-30 under 35 U.S.C. §102 and/or 35 U.S.C. §103 over US Patent No. 6379497 (US'497); are traversed below.

US'497, at best, describes multiply paperboard material containing bulking agents, such as expandable microspheres, substantially distributed therein (See Column 5, lines 30-35). Further, US'497 discloses that the bulk-enhancing additive should also be porosity-enhancing and be additively controlled so as to be distributed throughout the thickness of paperboard and size press applied binder and increase the "openness" of the sheet (See Column 5, lines 37-42). Still further, the binder may be starch (see Column 18, lines 23-24). When starch is used at the size press, US'497 discloses that the starch solids should be increased from typical (9.8wt% size press applied starch solids) to between 20% and 40% solids starch (see Column 30, lines 3-6) so that the "openness" of the sheet allows penetration of the size press applied starch solids into the sheet (see Column 30, lines 10-14). In fact, US'497 teaches that because the bulking agents (i.e. expandable microspheres):

"increase the 'openness' of the resulting paperboard, there is increased penetration of the size-press solids which allows for a greater amount of size press starch to be retained within the paperboard" (See Column 30, lines 10-14).

In direct contrast, the present invention relates, in part, to a paper or paperboard having improved bulk and stiffness containing a three layered single-ply I-beam structure having a top layer, a central layer and a bottom layer, and a bulking agent interpenetrated

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within the central layer, and optionally also *where the central layer is a cellulosic core layer, and the top and bottom layers are starch based, size-press applied coating layers that cover an upper and lower surface of the central layer with minimal penetration into the central layer* (See Claim 1). Further, the invention relates, in part, to methods of making and using the same (See Claim 16). Finally, the invention relates, in part, to methods and paper (or paperboard) where *the top and bottom layers are formed from 12 to 20wt% starch based, size-press applied coating layers that cover an upper and lower surface of the central layer with minimal penetration into the central layer*.

To summarize the history thus far, Applicants have previously traversed on the grounds that US'497 actually teaches away from an I-beam structure, especially when using higher than "typical" wt% of size press applied starch solids. At best, US'497 discloses the value of such a paper to have "openness" for increased high wt% size press applied starch penetration therein (i.e. does not contain an I-beam structure). Finally, there is absolutely no support (and actually specific teaching away) in US'497 regarding a paper substrate having an I-beam structure, a bulking agent, and size-press applied starch solids. Accordingly, Applicants have requested withdrawal of these grounds of rejection.

In the outstanding Office Action, the Office apparently takes the position that an "I-beam effect" is disclosed in US'497 because US'497 allegedly provided a paper substrate having enhanced bulking (via a bulking agent) and the application thereto of size at a high solids level, that improves tensile stiffness of the paper (See page 5 of the outstanding Office Action). Therefore, the Office equates an I-beam effect with improved tensile stiffness; and, provides a secondary reference, i.e. US 5,649,478, to support its position (see page 5). Further, the Office acknowledges that US'497 is completely devoid of explicit performance data found in the examples or elsewhere in the reference to prove the assertion therein US'497 that an I-beam effect (i.e. improved tensile stiffness) is achieved. Yet, the Office maintains the rejection based upon what appears to be "inherency" because the Office maintains that there is nothing found in US'497 that indicates that any one particular embodiment would not have an I-beam effect (not increase tensile stiffness) even though there is no data to support this assertion. Applicants respectfully disagree with the Office's interpretation of US'497 for the following reason: Not only is US'497 completely devoid of any data that supports the papers disclosed therein containing a bulking agent and the starch

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coating layers have an I-beam effect, the only data that is provided therein actually demonstrate that the paper substrates according to US'497 have a decreased tensile stiffness (i.e. no I-beam structure).

By definition, inherency is an admission that no explicit disclosure exists therein the cited references. As noted by the court in *In Re Ulrich*, 666 F.2d 578, 581, 212 USPQ 323 (CCPA 1981), the mere fact that a certain thing may result from a given set of circumstances is not sufficient to prove inherency. Inherency may not be established by probabilities or possibilities. Something that is inherent must inevitably be the result each and every time. It is by now well settled that the burden of establishing a *prima facie* case of anticipation resides with the Patent and Trademark Office. See *In Re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984), quoting *In Re Warner*, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA, 1967).

As noted by the Board of Patent Appeals and Interferences in *Ex parte Skinner*, 2 USPQ 2d 1788, before the Office can switch the burden of proof of showing non-inherency to the Applicant, the Office must provide some evidence or scientific reason to establish the reasonableness of the Office's belief that the functional limitation is an inherent characteristic of the prior art. In this case, the Office has provided no such evidence because the Office has not provided an adequate showing that the paper substrates according to U.S. '497 contain a bulking agent, size press applied starch layers and an I-beam structure each and every time.

The Office has taken the position that an I-beam structure is inherent in the paperboard disclosed by US'497. To demonstrate inherency however, it is not enough to show that an inherent property *may* occur each and every time, but there must be a concrete demonstration or reasoning set forth by the Office that such property does, in fact, occur each and every time within the reference's disclosure. The Office has merely provided two summary statements lacking any reference whatsoever to specific disclosures within US'497 that demonstrate US'497 discloses each and every limitation of the claimed invention, much less the specific basis within US'497 that sets out a reasonable expectation that an I-beam structure would occur each and every time. In order for inherency to apply, an I-beam structure must be present in the paperboard disclosed by US'497 each and every time and the Office fails to present any case whatsoever found within US'497.

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It should be noted that Applicants position is that an I-beam structure is not inherent in the paper substrates disclosed by US'497 when such paper substrates contain the bulking agent and the starch coating layers. Among the many disclosures in US'497 that teach away from the claimed invention (see Applicants previous arguments made in the Responses dated June 17, 2005 and February 8, 2006), the Office is directed to Figure 14 and column 38, line 62, to column 39, line 13, of US'497. Figure 14 discloses a paper substrate according to US'497 and containing size press applied starch at 9.8 and 32.6wt% solids.

First, the paper substrate according to US'497 and containing only size press applied starch at 9.8wt% solids has an improved Whole Sheet Tensile Stiffness compared to that of the paper containing only size press applied starch at 32.6wt% solids. Thus, no I-beam effect is achieved by the paper substrates according to US'497 as the size press applied starch solids are increased.

Second, when a paper substrate according to US'497 and containing size press applied starch at 9.8wt% solids contains 20lb/ton bulking agent, the Whole Sheet Tensile Stiffness actually decreases, not increases as compared to a paper substrate containing size press applied starch at 9.8wt% solids only. Thus, no I-beam effect is achieved by this paper substrate either. Further, when a paper substrate according to US'497 and containing size press applied starch at 9.8wt% contains 40lb/ton bulking agent, the Whole Sheet Tensile Stiffness remains about constant as compared to a paper substrate containing size press applied starch at 9.8wt% solids only. Thus, no I-beam effect is achieved by this paper substrate either.

Third, when a paper substrate according to US'497 and containing size press applied starch at 32.6wt% solids contains 20lb/ton bulking agent, the Whole Sheet Tensile Stiffness actually decreases dramatically (by more than 500 units), not increases as compared to a paper substrate containing size press applied starch at 32.6wt% solids only. Thus, no I-beam effect is achieved by this paper substrate either. Further, when a paper substrate according to US'497 and containing size press applied starch at 32.6wt% contains 40lb/ton bulking agent, the Whole Sheet Tensile Stiffness decreases dramatically (by more than 1000 units), not increases as compared to a paper substrate containing size press applied starch at 32.6wt% solids only. Thus, no I-beam effect is achieved by this paper substrate either.

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In light of all of the above, it is clear that there are several substrates, if not all substrates containing bulking agents, described by US '497 that do not have any data to support the conclusions. Further, when the substrates containing bulking agents and size press applied starch upon which performance data was tested to demonstrate I-beam effects therein, i.e. Whole Sheet Tensile Stiffness, the Whole Sheet Tensile Stiffness actually decreased, not improved, which is required by a substrate so as to have an I-beam effect (see page 5 of the Office Action). Accordingly, the Office is directed to Figure 14, which appears to contain the only data presented in US'497 that may arguably relate to the present invention. Applicants respectfully submit that this data provides a strong indication that any one, if not all, of the substrates disclosed by US'497 (when containing a bulking agent and containing size press applied starch) do not have an I-beam effect. Accordingly, US'497 provides data therein demonstrating that the I-beam effect does not occur each and every time within the paper substrates disclosed by US'497. Consequently, no *prima facia* case of inherency can possibly be maintained.

In addition, since Figure 14 is the only data provided by US'497; and, this data actually discloses a decrease (not an increase) in Whole Sheet Tensile Stiffness (i.e. no I-beam effect), Applicants maintain their position that US'497 actually teaches away from a paper or paperboard having improved bulk and stiffness containing a three layered single-ply I-beam structure having a top layer, a central layer and a bottom layer, and a bulking agent interpenetrated within the central layer, and optionally also where the central layer is a cellulosic core layer, and the top and bottom layers are starch based, size-press applied coating layers that cover an upper and lower surface of the central layer with minimal penetration into the central layer (See Claim 1). Accordingly, US'497 not only fails to inherently disclose the claimed invention, US'497 teaches away from the claimed invention.

For all of the above reasons, Applicants respectfully request that the above-mentioned rejections be withdrawn.

Applicants respectfully submit that the present application is now in condition for allowance. Favorable reconsideration is respectfully requested. Should anything further be required to place this application in condition for allowance, the Examiner is requested to contact below-signed by telephone.

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